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REVOLUTIONS IN MEDICINE, by C. Howard Ross, M.D.

[Excerpts from a lecture presented before the Washtenaw Historical Society November 13, 1957, which has been subsequently considerably extended and printed. The complete monograph is now on file in the Michigan Historical Collections, Rackham Building, Ann Arbor, where members of the Society, and all others interested, are freely invited to come and read it.]

I. INTRODUCTION

About every three years during the past two and one half decades, I have given a talk to lay and professional groups, entitled: "Revolutions in Medicine."

By the employment of forceful and inspirational methods of presentation, I have been able to blot out competing conversations in the audience and to prevent the oldsters from nodding.

It was my custom to begin with the ancient Medicine Man plus his execrations, incantations, purges, and charms. Then by way of Aaron's rod or Alcmaeon"s tomb or Hygeia's Caduceus - finally through some historical sleight-of-hand, I would arrive at the level of the priest-physician, making sly reference in passing to the personality of Aesculapius, the God of Medicine.

Revolutions have been known to destroy utterly. Others have followed the pattern of partial rejection and permissible re-building on an old foundation, even employing some of the old brick.

On February 21, 1956, this subject was presented somewhat in its present form, before an Association of University Librarians. It was a case of finally trying it out on the dog. My impudent presence, in their august midst, was like a small boy thumbing his nose at an onrushing steam locomotive. As I gave birth to this brainstorm baby without notes, Mrs. Ross urged me to formulate the entire paper's outline as given. I, therefore, sat me down and proceeded to do just that. After the storm of words had subsided, I then permitted myself the luxury of bibliographical peeping for dates and other accuracies, planning a formal presentation before the Washtenaw Historical Society in the fall of 1957. The indulgence in such a pattern will help to explain gross omissions.

Four great, stimulative aids have come upon me in completing this task, in the form of recent publications, namely:

1. Sir Winston Churchill's masterful presentation entitled: "History of the English-Speaking Peoples."

2. "The Story of Medicine" by Kenneth Walker of England.

3. "A History of Medicine" by Ralph Major, M.D., University of Kansas School of Medicine.

4. "A Pictorial History of Medicine" by Otto L. Bettmann, Ph.D., New York City.

In order to place ourselves properly in the historical pattern, the dawn of Medicine in the near East was somewhat contemporary with the Bronze Age in the British Isles. When the pre-Celtic priests of the Isles, known as Sun Worshipers, were supervising the erection of the Monoliths at Stonehenge, about 1700 B.C., the Babylonians were already flourishing in advanced medical practice.

Babylonian Medicine was a successor to a branch of Sumerian civilization, and together with Ancient Egyptian practice, was more or less a father to the Golden Age of Medicine in Greece.

Somewhere in the distant goings and comings, there were flavorings from Persia and India.

It is challenging to note that the Conquest of the Isles, by the ancient Celts, roughly began in the 13th Century before the Christian Era and continued for over half a millennium. Each migration from Europe's mainland slugged it out with its predecessor. These people were of the old Goidel Stock and became the ancestors of the present Highland Irish and the Highland Scotch. Coincident with this racial rough-house, the medical philosophers of China were pondering with placidity over the possible relationships between the plague and the rat population; also - could the mosquito be related to malaria? Over two millennia of time were required to prove up on some of these brain waves.

II. THE GRECIAN GOLDEN AGE OF MEDICINE

With several medical ancestors, the Golden Age of Medicine in Greece flourished for a half millennium before Christ. The medical hero was Hippocrates (460-370 B.C.), the father of Medicine, a sort of George Washington without a sword. The chief revolutionary elements of Hippocrates lay in the field of ethics and the elimination of the medical incantation. More than that, he not only was an observer of immaculate recording power, but set an example of soaring pedagogy. With these refinements in Greece, what were contemporary events in Europe? Some new groups of Celts, called the Brythons or Britons were leaving the mainland of Europe and invading the Isles, killing the Goidels or pushing them westward.

Those of us who bear Scotch-Irish blood - certainly do not inherit medical stamina from these earthy tribes in the early centuries. It was from Greece and the Minoan civilization that the fountains poured over. In a paper of this sort, one must bruise an era in order to rush on to its successor. Therefore, let me bring out a few of Father Hippocrates' modified remarks, in such statements as:

"Do not try experiments after a crisis."
"Convulsions following sepsis are a bad sign."
"Consumption occurs chiefly between the ages of 18 and 35."
"Old age endures starvation better than youth."
"Sleep following delirium is a good sign."
"To cure night blindness, eat raw beef liver soaked in honey."

His writings in Medicine and Surgery and the notations of his students and their succeeding generations - have sometimes been fused in our minds as the works of one man. Rather do they represent his thoughts and his school of thought for several generations.

The oath of Hippocrates may be described as a practical expression of guild ethics, good for its day, and with modern flavor, good for our day.

IV. "CLARISSIMUS" GALEN (130-? 200 A.D.)

Galen was the loud-mouthed operator and reporter of the Second Century A.D. He was Greek in origin. His early professional contribution included an appointment as "Surgeon to the Gladiators." Most of his sententious bedside notes cause the reader to pause and consider: "The only smart Doctor was Galen. All of his contemporaries were dubs." This is not a bad conclusion,considering the vast amount of quacks that he found, wallowing in the mud of pseudo-medicine.

It is a strange commentary on Galen's verbosity, that he never appears to mention his learned contemporary, Aretaios, who links diabetes to "The Siphon" in the "lost manuscripts," finally published in 1554. Galen created general and medical dictionaries, and wrote 500 books. So well did he force his doctrines upon his own time that he continued to sway the thought and squelch the brain power of succeeding generations for thirteen or more centuries. Galen mixed his own remedies, having little regard for the man "at the Corner Drug Store." In the so-called Dark Ages, no respectable physician could put out his shingle without reassuring the populace that he practised genuine Galenic medicine. Of course, he pulled the old humors out of the bag: blood, phlegm, yellow bile and black bile. Also, he insisted that the blood did a sort of gross off-the-cuff diapedesis through the inter-ventricular septum. However, he corrected the error of "air in the arteries" and substituted blood.

The only man who matched him, in the long medical gap before the Renaissance, was Alexander of Tralles (525-605 A.D.), who wrote the "Twelve Books on Medicine" and who knew when and when not to disagree with the old Second Century Master.

Galen's prowess did not escape the attention of the Roman

Emperor, and he became private physician to Marcus Aurelius and his immediate successors. He performed researches in anatomy and physiology; expressed himself on Monotheism and influenced the development of logic. In later centuries both Christians and Arabs claimed him.

Such was the man who gave Medicine its push and then almost stifled it for lack of nurture, since his followers "sensed his infallibility and most of them trimmed their science to fit Galen's frame." Those who knew better, with the exception of Alexander, kept their mouths shut or quickly issued a public retraction.

X. ANDREAS VESALIUS (1514-1563)

The family of Witting, from Wesel in the Duchy of Cleves, finally moved to Brussels. There the name was changed by the time Andreas was born.

He was bred from a tradition of medicine, handed down from generation to generation. His greatgrandfather cared for the sniffles of the Empress Marie, espoused to Maximilian I. Johannes was his name. Coming down a generation, we find Eberhardt, who not only listened to the complaints of royalty, but tucked such worthies as Hyppocrates and Rhazes into his medical writings. Now comes the father, whose name the son bore. He changed the tune and called the tricks as apothecary to Charles V, discussed later. The Emperor said "Ugh" on many occasions when Andreas the elder mixed up an unusually musk-flavored "tasty-sip" to be taken before breakfast.

In the person of Vesalius, we find the first perfectionist in Anatomy and an ardent exponent of artificial respiration. As a student of Sylvius, he set his stakes high. Then after five years of intensive research, dissection and study at Padua, he presented to the world, at the age of 28, his immaculate text-book plates of the human body, (De Humani Corporis Fabrica). With only a mite of revision here and there, they could well be the master-sheets of today's Medical Schools. Much of da Vinci's work had been "lost in an attic," and Vesalius could not benefit by it. More credit to his original research.

Did his old teacher acclaim him with: "Well, my boy, you have done it again?" He did not. Sylvius disowned his own spawn, making "noises to cover his ignorance." As the storm broke, Vesalius, in spite of his high-brow weasel coat of arms and all of his stern attainments, dragged his notes and unpublished works into the court yard and with self-imposed shrievalty, burned them forthwith.

However, he did not become a foot warmer at the stake. Instead, via shame and sham, he was appointed personal physician to the Holy Roman Emperor Charles V; flitted in and out of Court, and with tail dragging never expressed himself in medical controversy again. He thus experienced a spiritual cyphonism.

Charles V had reason to be liberal. His grandmother was Isabella of Spain, married to Ferdinand, the Catholic. His mother was

Crazy Jane, (Juana Loca), married to Phillip The Fair, The Hapsburg, who ruled the Low Countries. When Juana and Phillip were once visiting the old folks in Spain, Phillip became aware of urgent business at home and took a short cut via France. Crazy Jane followed by slow boat. When she finally arrived, she discovered a great banquet in full swing. She bowed low to "My Lord Phillip." She greeted the Ambassadors from England and France, but as she passed Phillip's golden-haired lady friend at the head table, there was a lightning movement from her royal purse and a jewelled instrument was extracted. A quick snip of the blue-blooded scissors and beautiful tresses of sunset hue lay upon the floor!

At one occasion, an elderly physician, when told this tale, gripped my hand fervently and exclaimed enthusiastically: "Well, bully for Crazy Jane!"

With such an origin, Charles V could well afford to be liberal with Vesalius. He was more stern with Martin Luther, but at least he was sufficient man of the world to let Frater Martinius continue existence.

Vesalius lived on in the twilight, but his work blazed the trail for other masters to come, who also were liberated from the "dead hand" of Galen. Such men included Fallopius, Cesalpino and Eustachius.

XII. WILLIAM HARVEY (1578-1657)

Harvey conceived of capillary circulation before the microscopes of Malphigi and Van Leeuwenhoek confirmed it, sometimes denying the existence of "venous pores," but living with the idea, just the same. Many before him had almost discovered the ineluctable and true circle of the blood, but Galen's spirit always arose and smote them down. Some like Patin of Paris were self-smitten. Harvey dismissed the interventricular seepage and finally assumed a systemic capillary network that ended at the arterial system and began at the venous system. His conception of systemic and pulmonary circulations is strictly modern, although the latter was broadly hinted at in the previous century by Columbo and Servetus (the martyred reformer whose thoughts on infant baptism were too much even for John Calvin's stomach).

In a public lecture, 1616, Harvey indicated the world reverberations that would follow his "circle theory" and even expressed some personal fear for his own safety. The publication of his lecture on The Circulation of the Blood did not occur until about twelve years later.

Those who opposed him or ignored the circle theory were Alexander Reid (Manual of Anatomy), Emilio Parisano of Venice, James Primrose of Paris, Caspar Hoffman of Nuremberg and Joannes Vesling of Padua.

Harvey's friend, John Aubrey wrote, "T'was believed by the vulgar that he was crack-brained and all the physicians were against his position."

However, by the time of Harvey's death, most of the great Universities of the world had acclaimed him.

XXIII. THE AMERICAN COUNTRY DOCTOR

At this juncture, it becomes fitting that I should present the background of an American practitioner, who enjoyed some filterings from John Morgan and Benjamin Rush, but who had not yet been exposed to the Advent of Anaesthesia. These were the early days of Benjamin Dudley and Daniel Drake. Also, much serious practice was accomplished before the refinements of Pasteur, Koch and Lister had appeared upon the scene. However, there was a jolt from Danville, Kentucky, when Ephraim McDowell became the father of ovariotomy in 1809.

Such a personality existed in the entity of my maternal great-greatgrandmother, Dr. Harriet John, who "read" medicine for two years and then served as "medical apprentice" for an equivalent time. In her library was the first surgical text written in America, by John Jones, 1775. The great State of Ohio, barely a decade of age, then granted her the right to practice long before women were accepted in medical schools, and before a stethoscope had reached America. She was admiring her name on her shingle about the time of the War of 1812, or shortly before. She was old in the practice before the first academically trained woman physician was graduated from Geneva Medical College January 23, 1849, in the person of Elizabeth Blackwell.

My own maternal grandmother became, for a time, the understudy in this heroic set-up. Calls were made on horse-back. Roads were rough trails. Ohio was just emerging from the wilderness.

Apparently these two active ladies were too busy or too remote to be taken up by "Thompson's vegetable compounds" or "Shew's water cure."

In their saddle-bags were neatly labeled mysteries of the profession. They rode side-saddle in good season, very lady-like indeed, with regulation petticoats. But, when ferocity entered into the weather, they wore manly riding breeches and changed to the western saddle.

In this regard you may recall that Dr. Mary Walker wore trousers even in good weather. She was the first female ever to serve on the staff of any army anywhere in war time, moving along with masculine stride in pants, through the War of the Rebellion and right up to President Arthur's Reception.

In 1837 was witnessed John Deere's steel plow; also the differentiation between typhoid fever and typhus by William W. Gerard.

Time rushed along, and in the early 1840's, the railroads came charging through the Northwest Territory. My grandmother described to me an accident at a railroad crossing near Xenia, Ohio. This was a year or so before the magic date of 1846 and the introduction of ether. As the two women arrived upon the scene, they found a corn wagon smashed and the farmer lying upon the ground with a

mangled leg. The sorrel mare also had a fractured lower leg. Dr. John ordered the onlookers to suspend the mare's belly in a burlap hammock between two walnut trees, excavating the ground under the injured leg. Gravity served as traction.

While this neat trick was being conceived, she was at the "ground side" of the human victim. An improvised tourniquet about the thigh of the badly mangled leg controlled the hemorrhage. She doused the man inside and out with corn whiskey. Her instruments were run through the flame of a lantern, rinsed in corn whiskey, and she began to whittle away at the task of amputation. (I wonder if she also washed her hands. See chapter XXVII.) In later weeks, the two women fashioned a "wooden leg" out of a seasoned piece of limewood (Linden).

The next spring two strange creatures ambled down the corn rows, the farmer with a crooked stride, reinforced with wood, and the mare, picking her awkward way over the clods with more than a nicety of orthopedic rehabilitation.

Payment for services was somewhat delayed, but was finally accomplished after the arrival, one fine day, of a beautiful sorrel colt at Dr. John's farm. In another paper I have discussed this physician's homely philosophy concerning the medical fee.

As an old lady, still doing her stint for more than two generations, Dr. John began to hear of the new wonders in the world of medicine. She adopted ether anaesthesia wholeheartedly. The whispered name of Pasteur began to sift through the maze, but she nibbled lightly only, and left these great new consequences to others who followed. Dr. Bettmann wonders how such a practitioner could "stack up" against the modern Freshman medical student. He votes, however, for "the intuitive discernment, all-inclusive medical wisdom and human understanding of the old ones." Dr. John lives on today in the personality of the generalist, who with goodness and mercy and intellect, has reincarnated and reglorified the medical masters of the ages.

From XXIX (the chapter on Rudolph Virchow, - 1821-1902 - who introduced the theory of Cellular Pathology.)

My own great Professor of Pathology, Dr. Alfred Scott Warthin, was once a student under Virchow, and reincarnated the old master in his immaculate and forceful lectures. His clinical pathological conferences equalled those of Welch in Baltimore. Volumes were spewed upon us in plenitude, without notes, but with a clarity that approached ferocity. To forget about Warthin and Virchow - would be like forgetting to eat and breathe.

XXXI. WILLIAM OSLER (1849-1920)

By the time Osler was born, Guy's Hospital in London had already perfected three great researching personalities, who with their successor - Gulls would influence his life. They were Thomas Hodgkin (Hodgkin's disease), Thomas Addison (Addison's disease) and Richard Bright (Bright's disease).

In Osler we have a reincarnation of the wit and pedagogy of Boerhaave himself. Delightful lectures, dripping with perfect diction, poured forth without notes and with an inspiration from the humanist, philosopher and scholar, that penetrated his students for a full lifetime. A like pattern was set by Friedrich Von Müller in Munich. Such was the great Sir William.

After graduate study abroad, Osler became, at 26, the Professor of Medicine and Physiology at McGill University in Montreal. By 1884 he transferred to the medical assignment at the University of Pennsylvania, walking with firmer tread than John Morgan and Benjamin Rush. Soon he would sit in the group portrait by Sargent: "The Four Doctors."

By 1889 through the endowment of the Quaker philantropist, Johns Hopkins (1795-1873), and under the able leadership of President Daniel Colt Gilman (1831-1908), he joined the Great of the World, including Welch, Kelly and Halsted; also Abel and Howell from Ann Arbor. He became Professor of Medicine at Johns Hopkins University, an infant school that was born a Titan. Said Osler to Welch, "We were lucky to get in as professors. We would never have made it as students." Here he called upon the geniuses of America and Germany in his techniques, dishing out intellectuality to the brilliant, tact to the fearful and sympathy to the poor in heart. There the students called Osler, "The Chief;" Welch, "Popsy;" Halsted, "The Professor." "The Professor's" students became as famous as those of "The Chief." They included General Finney, Hugh Young and Harvey Cushing.

Osler's great work, The Principles and Practice of Medicine, changed the swing of Medical Authority from Europe to the New World. It was the influential documentation that inspired the Rockefellers to create the Foundation for Medical Research in 1901. More was involved than the furtive passing of shiny dimes. William W. Welch was first head. He was followed by Simon Flexner, who transmitted poliomyelitis to monkeys and proved its viral nature in 1909.

But the curve keeps mounting. In 1905 Osler left our shores in the flesh but not in the spirit. He was appointed Regius Professor of Medicine, Oxford University, England, and was created Baronet in 1911. Pneumonia, typhoid fever, tuberculosis and Public Health were his pet fields, but the world at large became his broad haven of investigation. While he made no "avalanchial" discovery like Harvey, his students flooded the world with a feudality of brilliance. He dealt in the ancient medical works and was an outstanding medical historian. His "Evolution of Modern Medicine" was published shortly following his death. Osler deplored the "unrestricted manufacture of medical diplomas."

A nephew, Dr. W. W. Francis, published in 1929 a description of Osler's library, entitled "Bibliotheca Osleriana."

My Professor of Dermatology, Dr. Udo Wile, was a student of Osler, and one could feel the presence of the Great Baltimorian in the technique of the perfect approach to any new subject. In like manner, Curtis, successor to Wile, carries the modern torch valiantly.

Florence Nightingale

During Osler's span of life, the profession of modern nursing was granted its niche in the broad field of medical care. In mid-century the Crimean War was a mere phase of the struggle, created by Nicholas I of Russia, occupying The Danubian Principalities.

On September 14, 1854, the Allied Troops landed at Eupatoria in the Crimea. The English were commanded by Lord Raglan; the French by Gen. St. Cloud. The immediate objective was the fortress of Sebastopol. On October 26 the Battle of Balaclava gave English and American Literature its thrill in "The Charge of the Light Brigade."

Then the thrills stopped, and the scandals began. Following the Battle of Inkerman, the heaviest of winters settled down upon the Allied forces, who underwent death-dealing shortages of food, fuel, clothing and medical care. Here Florence Nightingale (1820-1910) entered into the vermin-ridden debacle, with relief work, organized nursing and the exhibition of kindly human care, as opposed to theoretical techniques. The "War Lords" treated her with disdain and obstructive maneuvers, yielding her a sort of "Miss Zero" classification, mistaking her for the "bawdy broads" in the hospitals back home.

She outshone the entire British medical organization. With only three dozen assistants she reduced the death rate at Skutari Hospital from 42% to almost nil. Queen Victoria said of her, "Such a one we should have at the War Office." Florence later established the first professional nursing school at St. Thomas Hospital.

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CONCLUSION [Editor]

In his final chapters Dr. Ross summarizes the broad advances in the field of medicine in recent generations. Often he pays tribute to famous Ann Arbor physicians and surgeons: Dr. G. Carl Huber, Dr. Max Minor Peet and Dr. Elizabeth Crosby in the field of neurosurgery; Dr. Carl Badgley, a "world contributor" in bone and joint surgery; Dr. Harold M. Falls, Dr. Bruce Fralick, and "the two old masters, Parker and Slocum," in ophthalmology; Dr. Thomas Evans and his chief, Dr. Norman Miller, for their salvage of "Rh babies;" Dr. John Alexander for his pioneering in thoracic surgery in the fight against tuberculosis; and Dr. Thomas Francis, Jr., who after evaluating the Salk vaccine against polio in Ann Arbor, officially presented it to the world by radio on April 12, 1955.

Two striking quotations accompany the portraits of Dr. Ross's two professional heroes:

> Dr. Reuben Peterson: "It is seldom found that the patient will present himself to the physician with the diagnosis boldly emblazoned in red letters upon his forehead."

Dr. Frederick A. Coller: "Let us keep our minds open and break with the past on good grounds."

With due thanks to these brilliant and colorful leaders in his profession, Dr. Ross asks them to share the dedication of his fascinating treatise with his "unconquerable and valiant paternal grandmother, Mrs. Frances Elizabeth Louthan Ross, whose joy in historical delvings" was transmitted to him "at the tender age of eight." Under the portrait of this bright-eyed little woman he quotes her as saying,

"If I am telling the blackest historical lie, that damns me to the darkest hell, my grandchildren will keep their mouths shut until the company goes."